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A comparison of national statistics on health services available in rural and urban areas of the United States from 1935-1966 revealed a relatively lower supply of health services per capita in rural areas and significant geographic differences in the supply of trained health personnel. It was shown that medical expenditures per family tended to rise with increasing income and educational levels (both lower in rural areas); however, rurality appeared to be a specific factor in the variation in medical expenditures. Data indicated that increasing rurality was directly related to a decreasing reliance on specialists for health care. Numerous graphs and tables are presented to illustrate the discussion. (DK)

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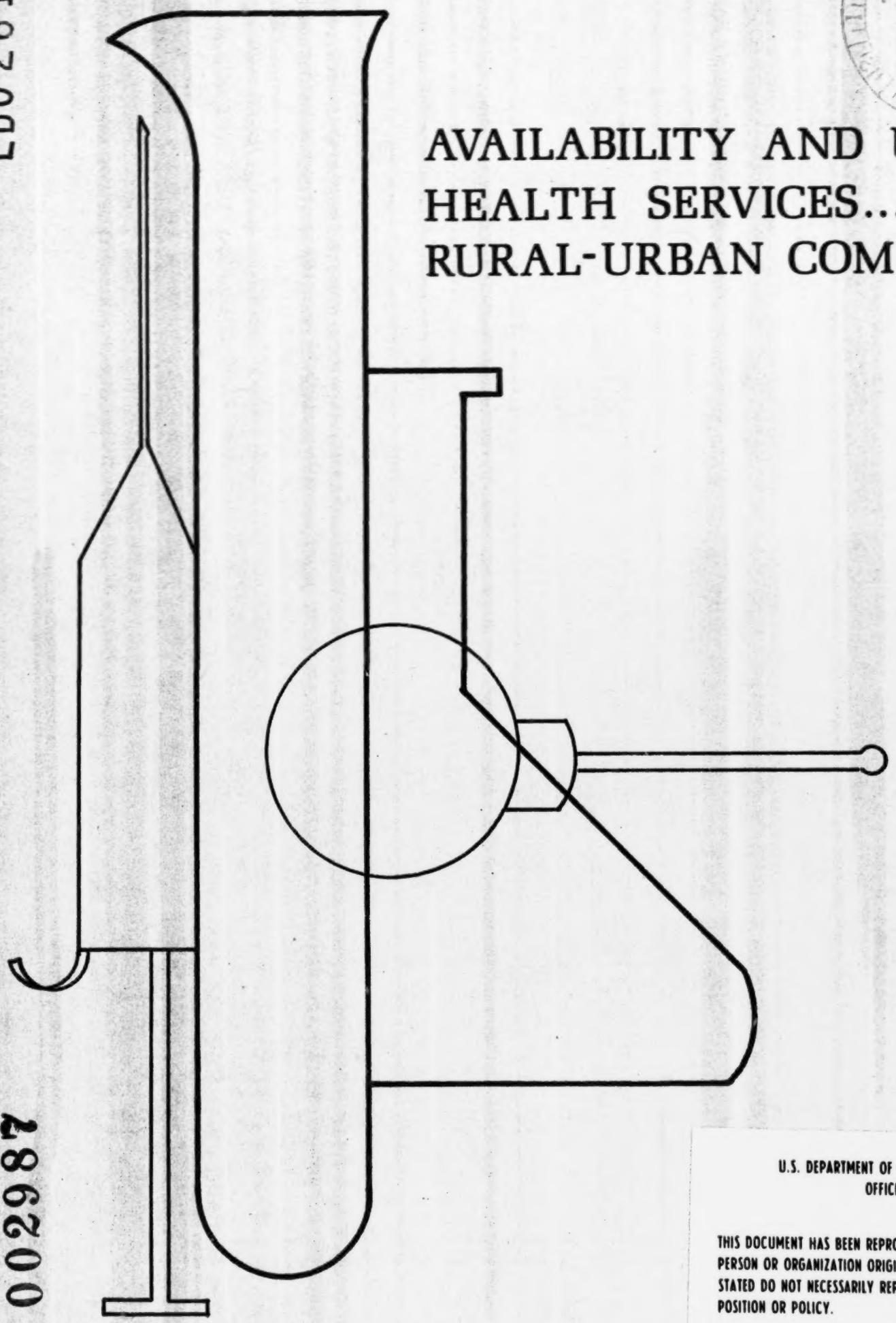
AVAILABILITY AND USE OF HEALTH SERVICES.... RURAL-URBAN COMPARISON



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SUMMARY

The supply of personnel in health occupations is lower on a per capita basis in rural areas than in urban areas--in 1962 there were 53.9 percent more physicians per 100,000 persons in urban areas than in rural. This may be a reflection of population sparsity or the concentration of lower incomes, both of which would contribute to the lack of support for specialized medical personnel and facilities in rural areas. Though modern transportation has lessened the need for complete local medical services and facilities, persons living in extremely rural areas still do not have the ease of access to specialized and comprehensive medical care that those living in or near metropolitan areas have. This is partly the result of a trend since about 1950 toward specialization in medical practice. In 1950, 36 percent of the physicians were in private practice compared with 61 percent in 1963. Most of these practiced in urban areas.

Family outlays for medical expenditures tend to rise as income and education increase, and are greater for families living in urban than rural areas. The use of a specializing physician is more common in a Standard Metropolitan Statistical Area (SMSA) than in a non-SMSA. Specialists were used by about 6 percent more of the urban population than the rural. Chiropractors were the exception.

The use of optometrists was uniform as measured by percentage of people with visits.

AVAILABILITY AND USE OF HEALTH SERVICES--Rural-Urban Comparison

By

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Social Science Analyst, and Bernard Hoffnar, Agricultural Economist
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Economic Research Service

INTRODUCTION

Health is an important economic variable influencing business activity and growth in rural areas. Health services are both a consumer item adding to total demand and a factor affecting productivity and the supply of goods and services available for local consumption or for export. An examination of the problems associated with rural health is important in gaining insights into the interplay of social, economic, medical, engineering, and other factors influencing the health of a population. These factors provide clues to the preliminary steps needed to shape public policy and action.

The economic data available on health services are scarce. They are not exact or uniform throughout the country. This report provides comparisons of national statistics and will give the regional planner a basis from which to work. Data presented here were compiled from various sources. To analyze a particular section or region of the country will require an in-depth and precise survey to obtain the desired results.

The method of examination in this report was to select material for comparison of rural against urban statistics, or metropolitan (about two-thirds urban) against nonmetropolitan (about three-fourths rural) data. References are made to two generally accepted definitions of rural and urban. One was established by the Bureau of the Budget which lists counties under five demographic categories from greater metropolitan to isolated rural, as follows: Counties within Standard Metropolitan Statistical Areas are classified as (1) greater metropolitan if they are in an SMSA of 1 million or more population, or (2) lesser metropolitan if the SMSA population is 50,000 to 1 million. (3) Adjacent counties are not themselves metropolitan in population, but are contiguous to metropolitan counties. All other counties are classified as isolated; (4) semirural counties contain an incorporated place (town, village, etc.) of 2,500 or more population, (5) rural counties do not.

The other definition, established by the Census Bureau, designates an urban county as one which has a population center of 2,500 or more. Any county with no population center greater than 2,500 is considered rural. The available data dictated the selection of the topics discussed.

SUPPLY OF PERSONNEL IN VARIOUS HEALTH OCCUPATIONS

There are significant geographic differences in the supply of trained health personnel throughout the United States not only in primary professions, such as physicians and dentists, but also for other health occupations, such as nurses, pharmacists, sanitarians, sanitary engineers, and veterinarians. Table 1 summarizes the comparative data on health personnel for the five county groups in 1962. The relative densities of hospital beds and effective buying power per capita indicate that persons living in isolated, or 100 percent rural, counties are not served by as many health personnel on a per capita basis as those living in or near metropolitan areas.

Table 1.--Ratio of persons in health occupations and other data to population, by county group, 1962

Item	Greater metropolitan	Lesser metropolitan	Adjacent to metropolitan	Isolated semi-rural	Isolated rural
	Number				
Health personnel per 100,000 population:					
Dentists	71.0	52.0	38.7	40.6	27.4
Nurses, total	492.7	509.3	388.3	350.6	195.7
Active	327.5	339.6	254.2	242.8	125.9
Pharmacists	81.2	65.2	51.3	56.0	45.3
Physicians, total	205.3	153.0	91.5	100.4	59.1
M.D.	195.4	145.3	85.6	94.2	53.0
D.O.	9.9	7.7	5.9	6.2	6.1
Sanitarians	4.6	6.9	5.8	6.3	3.9
Sanitary engineers	4.1	3.5	1.5	1.5	0.3
Veterinarians	7.5	10.6	17.3	16.5	15.6
General hospital beds per 1,000 population	4.0	3.9	3.2	4.1	2.0
Effective buying income per capita 1/.	$2,526	$2,070	$1,654	$1,551	$1,207

1/ All income (including transfer payments) minus all taxes.

Source: U.S. Dept. of Health, Education, and Welfare, Pub. Health Serv. Health Manpower Source Book, Sect. 19, Location of Manpower in 8 Occupations, 1965.

The number of medical personnel is not distributed equally among the general population. Metropolitan areas attract more physicians for both economic and professional reasons. Access to and contact with medical teaching centers, major hospitals, and research institutions are important factors contributing to the concentration of physicians in metropolitan areas, as are the economic and social characteristics of the population of such areas.

Table 2 illustrates the large number of physicians who become specialists requiring higher population concentrations of urban areas to maintain their practices. In 1950, about 36 percent of physicians in private practice considered themselves specialists, 1955, 44 percent; 1960, 56 percent; and 1963, 61 percent. Between 1955 and 1963, the proportion of particular specialists in private practice (as distinguished from general practitioners) increased substantially.

Private practice specialties	Percent	
	1955	1963
Surgical	23	32
Medical	15	20
Psychiatry and neurology . . .	3	5
Other	3	4

During the same period, the number of general practitioners in private practice decreased from 56 percent to 39 percent.

General practitioners were dispersed more equally among the population in 1959 and 1965 than were medical specialists who were concentrated in metropolitan areas (tables 3 and 4). The total number of G.P.s in the United States diminished substantially between 1950 and 1960, while the number of persons living in rural areas has changed little (table 5).

The absolute and relative changes from 1950 to 1960 in the total and rural population in the United States and the changes in the supply of M.D.s and G.P.s are shown in tables 5 and 6. The total population increased about 18.5 percent during this decade. The data indicate the extent to which sparsely populated areas tended to have diminished per capita medical services available in the 1950's.

The continuing decline in the number of the G.P.s is more critical for the rural population than the urban because the rural areas have relied mostly on the general practitioner and less on specialists. Also, the rural areas have fewer physicians per capita. A comparison between 1959 (fig. 1 and table 7) and 1963 statistics (fig. 2 and table 8) indicates that the availability of medical services per capita to persons living in isolated counties has shown little change, while persons living in, or near, metropolitan areas have had a considerable increase in the number of full-time specialists available (fig. 3).

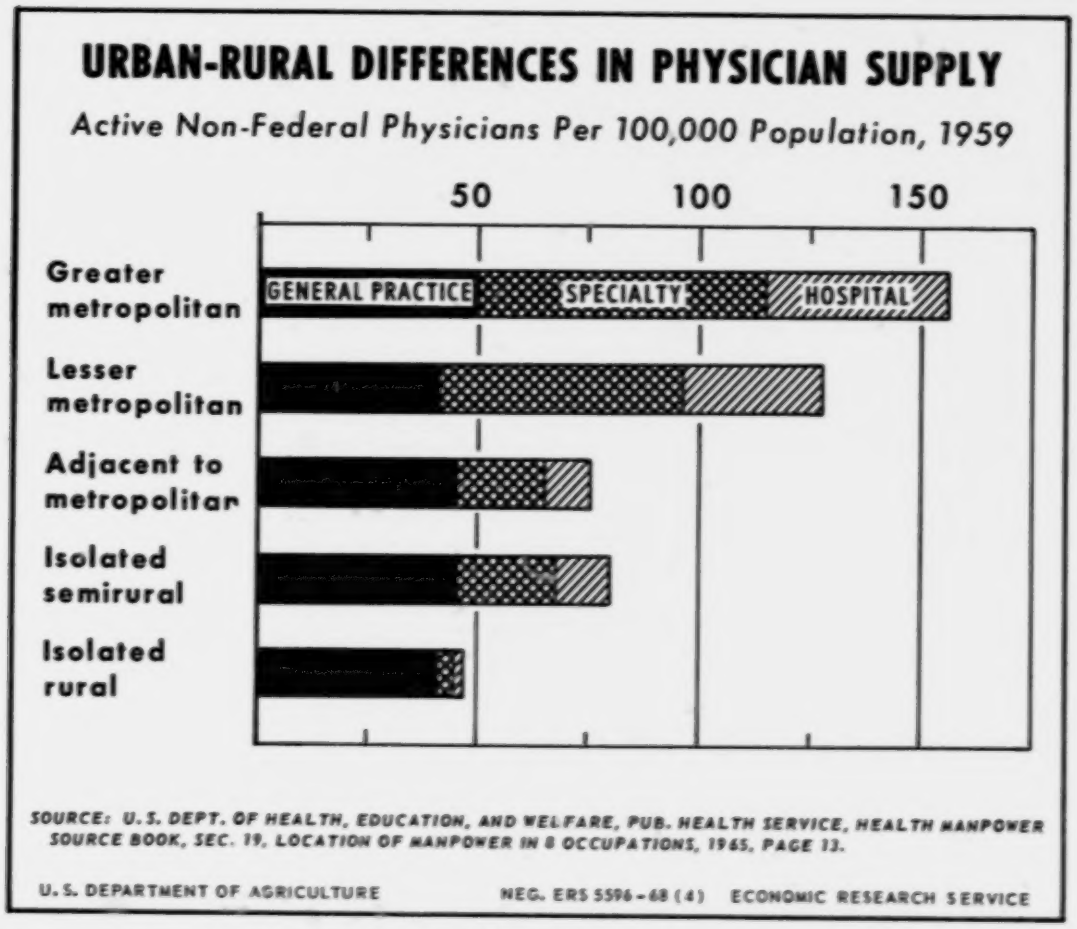
URBAN-RURAL DIFFERENCES IN PHYSICIAN SUPPLY
Active Non-Federal Physicians Per 100,000 Population, 1959
50
100
150
Greater metropolitan
GENERAL PRACTICE
SPECIALTY
HOSPITAL
Lesser metropolitan
Adjacent to metropolitan
Isolated semirural
Isolated rural
SOURCE: U.S. DEPT. OF HEALTH, EDUCATION, AND WELFARE, PUB. HEALTH SERVICE, HEALTH MANPOWER SOURCE BOOK, SEC. 19, LOCATION OF MANPOWER IN 8 OCCUPATIONS, 1965, PAGE 13.
U.S. DEPARTMENT OF AGRICULTURE
NEG. ERS 5596-68 (4) ECONOMIC RESEARCH SERVICE

Figure 1

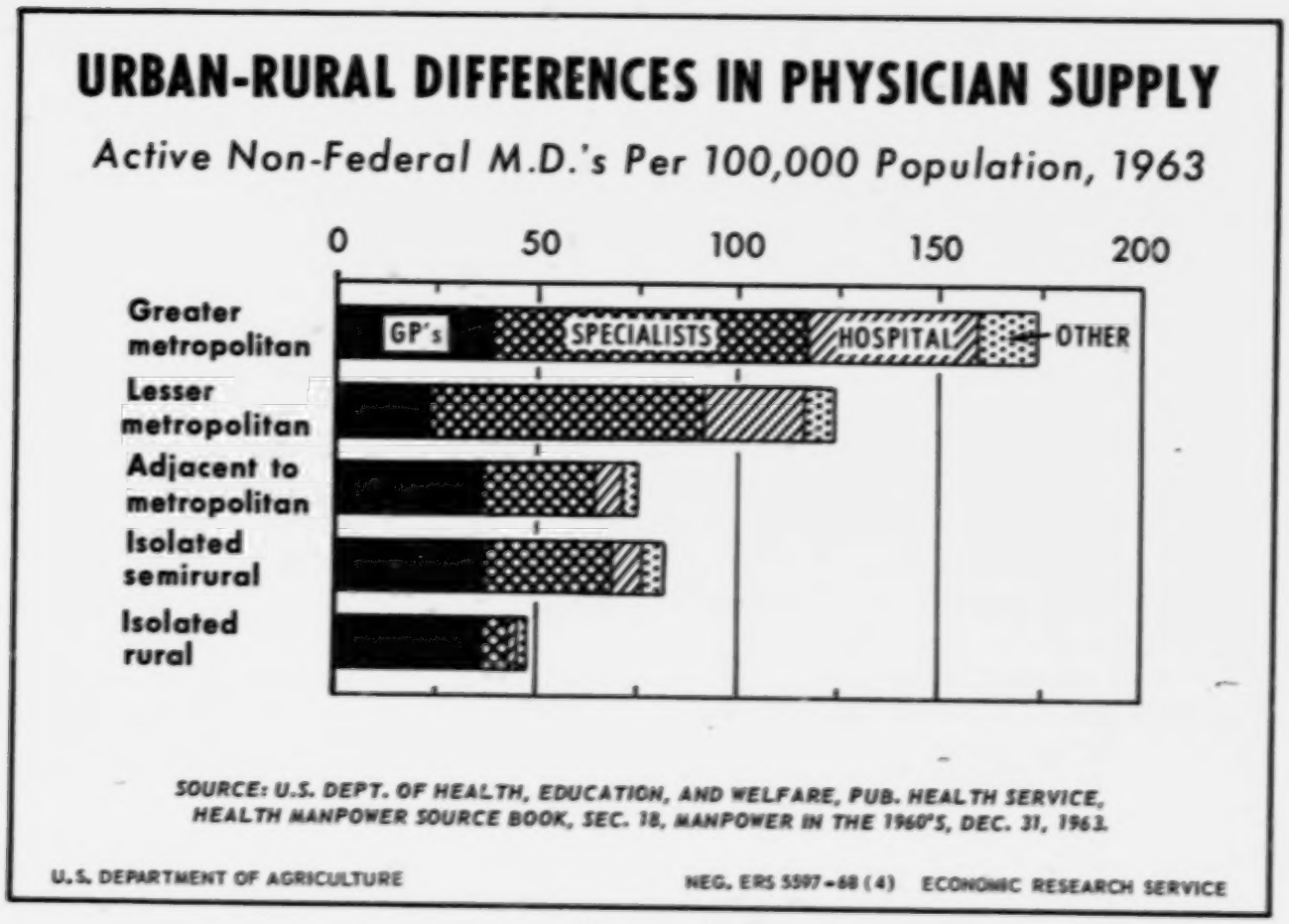

Figure 2

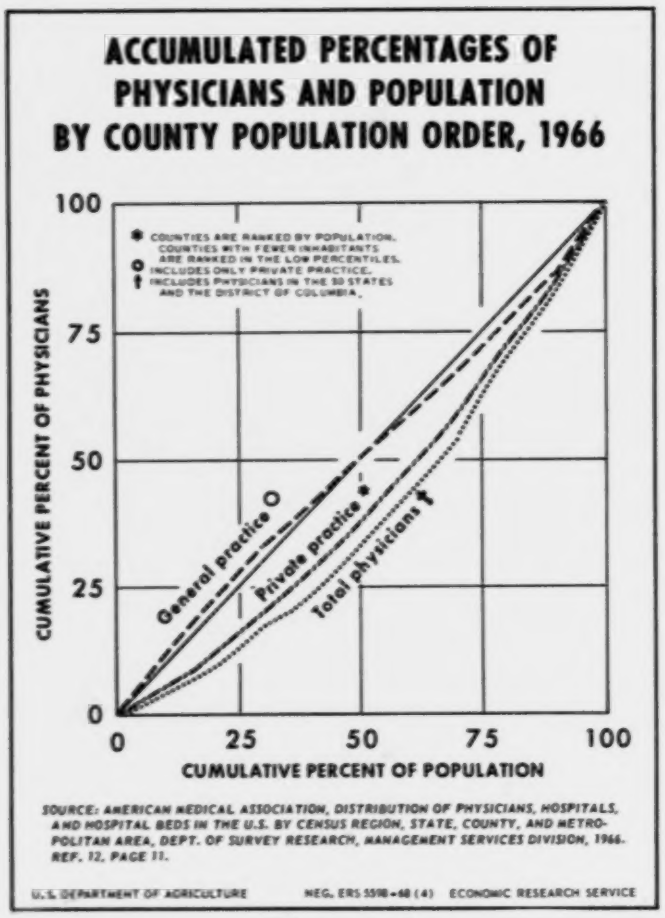
ACCUMULATED PERCENTAGES OF PHYSICIANS AND POPULATION BY COUNTY POPULATION ORDER, 1966
COUNTIES ARE RANKED BY POPULATION. COUNTIES WITH FEWER INHABITANTS ARE RANKED IN THE LOW PERCENTILES.
INCLUDES ONLY PRIVATE PRACTICE.
INCLUDES PHYSICIANS IN THE 50 STATES AND THE DISTRICT OF COLUMBIA.
CUMULATIVE PERCENT OF PHYSICIANS
100
75
50
25
0
General practice O
Private practice *
Total physicians †
0
25
50
75
100
CUMULATIVE PERCENT OF POPULATION
SOURCE: AMERICAN MEDICAL ASSOCIATION, DISTRIBUTION OF PHYSICIANS, HOSPITALS, AND HOSPITAL BEDS IN THE U.S. BY CENSUS REGION, STATE, COUNTY, AND METROPOLITAN AREA, DEPT. OF SURVEY RESEARCH, MANAGEMENT SERVICES DIVISION, 1966. REF. 12, PAGE 11.
U.S. DEPARTMENT OF AGRICULTURE
NEG. ERS 5518-68 (4)
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Figure 3

Table 2.--Major specialties among types of practice, 1963

Type of practice	Total active M.D.s	Percent by major specialty					
		Total	General	Medical	Surgical	Psychiatry, neurology	Other
Private practice	174,974	100	39	20	32	5	4
Training:							
Intern	9,517	100	89	6	4	1/	1
Resident	29,002	100	2	29	44	13	12
Federal service	18,551	100	21	25	25	9	20
Other non-Federal	29,686	100	12	24	15	14	35
Total	261,730	100	32	21	30	7	10

1/ Less than 0.5 percent.

Source: U.S. Dept. of Health, Education, and Welfare, Pub. Health Serv. Health Manpower Source Book, Sect. 18, Manpower in the 1960's.

Table 3.--Distribution of non-Federal physicians by type of practice and county group, mid-1959

County group	Physicians												
		Private practice		Hospital service		Teaching, administration	Not in medical practice						
	Total	General practice	Full-time specialty	Intern, resident	Other			Total	Gen. prac.	FT spec.	Hosp. serv.	Teach. admin.	Not in prac.
	Number							Percent					
United States	218,570	81,957	78,635	24,818	14,912	7,931	10,317	100	37	36	18	4	5
Metropolitan-adjacent	187,146	63,816	71,074	24,172	12,312	7,285	8,487	100	34	38	19	4	5
Greater metropolitan	99,840	31,282	39,088	15,002	6,676	4,010	3,782	100	31	39	22	4	4
Lesser metropolitan	66,148	20,613	26,859	8,526	4,010	2,784	3,356	100	31	41	19	4	5
Adjacent	21,158	11,921	5,127	644	1,626	491	1,349	100	57	24	11	2	6
Isolated	31,424	18,141	7,561	646	2,600	646	1,830	100	58	24	10	2	6
Isolated semirural	27,605	14,932	7,363	637	2,513	590	1,570	100	54	27	11	2	6
Isolated rural	3,819	3,209	198	9	87	56	260	100	84	5	3	1	7

Source: U.S. Dept. of Health, Education, and Welfare, Pub. Health Serv. Health Manpower Source Book, Sect. 19, Location of Manpower in 8 Occupations, 1965. Page 13.

Table 4.--Urban-rural distribution of non-Federal physicians by county groups, 1965

Item	United States 1/	Urban 2/	County Groups									
			Greater metropolitan		Lesser metropolitan		Adjacent to metropolitan		Isolated semirural		Isolated rural	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total physicians by State	266,045	89.2	131,506	49.4	81,231	30.5	24,684	9.3	25,651	9.7	2,973	1.1
Total in private practice	179,641	87.3	81,588	45.4	55,568	30.9	19,729	11.0	20,123	11.2	2,633	1.5
General practice	64,957	80.4	24,140	37.2	17,113	26.3	10,966	16.9	10,464	16.1	2,265	3.5
General surgery	17,551	87.0	7,566	43.1	5,810	33.1	1,898	10.8	2,142	12.2	135	0.3
Internal medicine	22,331	91.9	12,105	54.2	6,884	30.3	1,539	6.9	1,735	7.8	68	0.3
Obstetrics & gynecology	12,479	92.0	6,197	49.7	4,276	34.3	1,010	8.0	970	7.8	26	0.2
Pediatrics	9,549	91.6	4,738	49.6	3,253	34.1	754	7.9	786	8.2	18	0.2
Psychiatry	8,141	96.4	5,516	67.8	2,022	24.8	311	3.8	280	3.4	12	0.2
Number of hospitals	5,580	64.9	1,219	21.9	1,163	20.8	1,237	22.2	1,557	27.9	404	7.2
Number of hospital beds	714,792	81.9	268,242	37.5	222,741	31.2	94,316	13.2	116,445	16.3	13,048	1.8
Resident population	192,769,800	82.0	68,932,800	35.8	58,848,800	30.5	30,217,600	15.7	28,628,900	14.8	6,141,700	3.2

1/ 100.0 percent of total.
2/ Includes counties in groups 1, 2, and 3.
Source: American Medical Association, Distribution of Physicians, Hospitals, and Hospital Beds in the U.S. by Census Region, State, County, and Metropolitan Area, Dept. of Survey Res. Mangt. Serv. Div. 1966.

Table 5.--Rural population and supply of general practitioners, United States, 1950 and 1960

Years	Total M.D.s 1/	Percentage G.P.s of all M.D.s	Total G.P.s	Rural population 2/		Total U.S. population
				Number	Percent of total U.S. population	
	Number	Percent	Number	Millions	Percent	Millions
1950	220,000	.64	141,000	54.3	36.0	150.7
1960	260,500	.44	114,400	54.0	30.1	179.3
	Percent of change					
1950 to 1960	18	-20	-19	0	6	+19

1/ Includes retired physicians and those in Federal service.
2/ U.S. Census definition--persons residing in counties with no population center greater than 2,500.

Source: U.S. Dept. Health, Education, and Welfare, Pub. Health Serv. Health Manpower Source Book, Sect. 18, Manpower in the 1960's.

Table 6.--Numbers of persons employed in health occupations and ratios to population, 1950 and 1960

Occupation	Employed, 1960	Female	Increase, 1950 to 1960	Rate per 100,000 population: 1960 Total	1960 Urban	1960 Rural	1950 total
	Number	Percent	Percent				
Professional and Technical:							
Chiropractors	14,320	9.8	10.9	8.0	9.5	4.5	8.5
Dentists	83,003	2.3	10.1	46.3	57.3	20.7	49.8
Dietitians and nutritionists	26,119	92.7	16.2	14.6	17.5	7.7	14.9
Optometrists	16,044	4.2	9.6	8.9	11.2	3.8	9.7
Pharmacists	92,155	7.7	4.3	51.4	63.3	23.8	58.4
Physicians and surgeons	228,926	6.8	18.9	127.7	160.2	52.1	127.2
Physicians, including osteopaths	232,866	6.9	17.8	129.9	162.8	53.6	130.6
Professional nurses	582,379	97.5	45.5	324.8	381.5	193.4	264.5
Psychologists	12,040	31.1	150.2	6.7	8.6	2.2	3.2
Technicians, medical and dental	138,162	62.4	80.2	77.0	95.0	35.3	50.7
Therapists and healers (n.e.c.)	36,654	53.9	48.9	20.4	25.6	8.5	16.3
Veterinarians	14,819	2.1	10.5	8.3	7.0	11.3	8.9
Other:							
Attendants, hospital and other institution	391,800	73.6	90.9	218.5	236.3	177.2	135.6
Attendants, physician's and dentist's office	70,655	97.6	72.5	39.4	47.6	20.4	27.1
Opticians, and lens grinders and polishers	20,349	15.0	6.0	11.3	14.4	4.2	12.7
Practical nurses and midwives	206,896	95.6	49.7	115.4	125.3	92.3	91.3

Source: U.S. Dept. of Health, Education, and Welfare, Pub. Health Serv. Health Manpower Source Book, Sect. 17, Industry and Occupation Data, 1963.

Table 7.--Non-Federal physicians (M.D.) per 100,000 civilians, 1959

County group	Total	General practice	Full-time specialty	Hospitals and other	Not in practice
			Number		
United States	125.3	47.0	45.1	27.3	5.9
Metropolitan-adjacent	138.9	47.4	52.7	32.5	6.3
Greater metropolitan	164.6	51.6	64.4	42.4	6.2
Lesser metropolitan	136.4	42.5	55.4	31.6	6.9
Adjacent to metropolitan	82.4	46.4	20.0	10.8	5.2
Isolated	79.3	45.8	19.1	9.8	4.6
Isolated semirural	86.0	46.5	22.9	11.7	4.9
Isolated rural	50.9	42.8	2.6	2.0	3.5

Source: U.S. Dept. of Health, Education, and Welfare, Pub. Health Serv. Health Manpower Source Book, Sect. 19, Location Manpower in 8 Occupations, 1965. Page 12.

Table 8.--Number of Non-Federal physicians (M.D.) per 100,000 population by county group, 1963

County group	Total	In private practive		Hospital staff interns, residents	Teaching, research, industry	Retired not in practice
		General practice	Full-time specialty			
			Number			
United States	132	35	56	24	10	7
Metropolitan-adjacent	143	35	63	27	11	7
Greater metropolitan	181	38	80	40	15	8
Lesser metropolitan	133	30	62	23	10	8
Adjacent to metropolitan	80	38	27	6	4	5
Isolated	81	38	27	7	3	6
Isolated semirural	87	38	31	8	4	6
Isolated rural	50	38	6	1	1	4

Source: U.S. Dept. of Health, Education, and Welfare, Pub. Health Serv. Health Manpower Source Book, Sect. 18, Manpower in the 1960's.

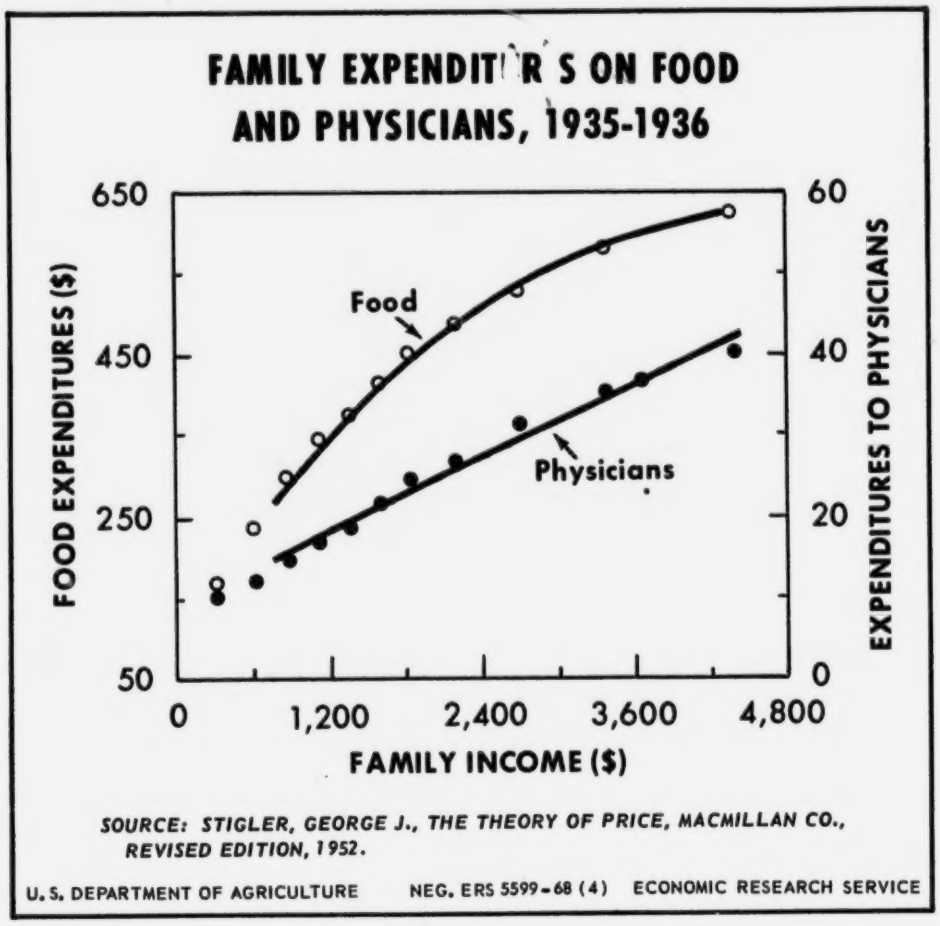

Figure 4

INCOME AND EDUCATION EFFECTS ON ELASTICITIES

Medical expenditures per family tend to rise with increasing income and education. Much of the variation in medical expenditures is generally due to the lower levels of income and education of rural residents. However, rurality also appears to be a specific factor.

Available data relating health care expenditures to measures of income, education, and rurality allow for rough estimates of income elasticities for various educational attainments by the family head in rural and urban places.

In computating the elasticities, the available independent variables are published in relatively large class intervals. For example, educational attainment is indicated in several studies by assignment into one of three categories, namely, less than 9 years of schooling, 9-12 years, and 13+ years of schooling; income in some tabulations is assigned to one of the intervals: less than $2,000, $2,000-$3,999, $4,000-$6,999, $7,999-$9,999, and $10,000+.

In the comparison of income elasticities with respect to expenditures for physicians and for food at home, the elasticity of expenditures for food at home decreases uniformly, that of physician expenses increases (fig. 4 and table 9; see also 5). 1/

1/ Underscored numbers in parentheses refer to items in Selected References, pp. 25 and 26.

Table 9.--Family expenditures on food and physicians, 1935-36

Personal income	Physicians' services		Food	
	Expenditures	Elasticity	Expenditures	Elasticity
Billion dollars	Million dollars		Billion dollars	
50	640	0.79	13.7	1.05
60	741	0.82	16.6	1.04
70	842	0.84	19.5	1.03
80	943	0.86	22.4	1.03

Source: Stigler, George J., The Theory of Price, Macmillan Co., Revised Edition, 1952.

Using 1958 household survey data, Feldstein calculated an income elasticity of 0.6 for health services. The qualitative implications of medical care, i.e., the significance of elasticities of demand with respect to price and income and the elasticity of supply, are also discussed by Feldstein.

The elasticity of total medical expenses relative to income was estimated to be less than 1, as calculated in the surveys of the National Center for Health Statistics in 1962 (table 10). The same was the case for hospital, physician, dental, and medicine expenses. The elasticity was near 1 for dental expenses (highly discretionary) and only about 0.2 for hospital expenses (least discretionary). This can be observed without elaborate calculations by comparing the ranges of the respective components of expenses with the ranges of income.

Rough calculations were made of income elasticities for total hospitals, physician, and dental expenses. The midpoints of the income intervals were made to correspond to the expended amounts; the differences between midpoints were the approximations to the income differentials. To avoid the difficulties resulting from the open-end interval $10,000+, the computations were carried out up to the family income of $10,000.

Interpretation of table 10 takes into account expenses paid out of pocket or by the insurer but not by government or philanthropic agencies.

Table 10.--Income elasticities for health expenses that include hospital, physician, and dental expenses, by education of family head (age-adjusted expense per person per year), July-Dec. 1962

Family income	Midpoint	Education of family head							
		All families		Under 9 years		9 - 12 years		13 + years	
		Expense	Elasticity	Expense	Elasticity	Expense	Elasticity	Expense	Elasticity
		Dollars		Dollars		Dollars		Dollars	
		Total expense							
Under 2,000	1,000	96		82		111		141	
2,000-3,999	3,000	110	.19	101	.28	117	.08	137	-.04
4,000-6,999	5,500	127	.29	111	.20	132	.25	143	.09
7,000-9,999	8,500	145	.35	141	.60	139	.14	158	.27
		Hospital							
Under 2,000	1,000	24		21		29		37	
2,000-3,999	3,000	29	.26	27	.33	30	.05	36	-.04
4,000-6,999	5,500	31	.14	28	.08	34	.26	29	-.53
7,000-9,999	8,500	32	.09	35	.57	32	-.18	34	.42
		Physician							
Under 2,000	1,000	32		27		39		42	
2,000-3,999	3,000	36	.17	33	.27	38	-.04	42	.00
4,000-6,999	5,500	43	.36	38	.29	45	.34	48	.27
7,000-9,999	8,500	49	.35	49	.64	45	.00	56	.40
		Dental							
Under 2,000	1,000	9		6		10		23	
2,000-3,999	3,000	11	.27	9	.50	13	.35	18	-.42
4,000-6,999	5,500	17	.78	13	.68	17	.52	25	.61
7,000-9,999	8,500	24	.83	20	.99	23	.62	27	.21

Source: National Center for Health Statistics, Personal Health Expenses, Per Capita Annual Expenses, July-December, 1962. Series 10, #27.

Calculations were made of the (partial) income elasticities of persons whose family head had less than 9 years of schooling. Again, only the income brackets under $10,000 were considered.

The higher the education of the family head, the more erratic is the behavior of the elasticities. This may be due to sampling errors caused by the decreasing size of the population and sample, to inaccurate reporting by the households surveyed, or to actual variation among those with higher levels of education.

The fact that more free medical care was obtained by low income groups than by any other income group may have contributed somewhat to the observed discontinuities in expenses. There is very little public dental care.

Medical expenditures tend to rise as the number of years of schooling of the household head increases. Medical expenses, however, decrease as a percentage of total spending, pointing to a positive but inelastic response of medical expenses to educational attainment. In a sample of 13,728 households throughout the United States in 1960-61, the level of medical expenses per family rose from $270 per family for those in which the head had 8 years or less of schooling to $485 per family in which the head had more than 16 years of schooling 2/ However, families with heads of higher educational attainment allocated only 6.1 percent of total spending for medical care while those with lower educational attainments allocated 7.4 percent. This seems to imply that in areas where family income and educational levels are rising, medical expenditures' share of the total gross product is falling.

Much of the inelastic response of medical expenses to education may be a spurious consequence of the correlation between education and earning ability coupled with an inelastic income response. To gain insights into effects of holding income constant, a group of farm families from the above sample was examined. Ninety-five farm families living in Appalachian counties were selected who had families of more than two persons and expenditures greater than $2,500. With this selection, some variation due to fluctuation in income and family requirements was removed. Thirty-five families had less than an 8th grade education, with an average of 5 years. The remaining 60 averaged 10 years of schooling. The increase of 5 years in educational attainment with little change in income was related to an increase of $52 per year in medical expenses, pointing to a positive response to educational attainment given adequate incomes.

In another group of 56 families whose expenditures were less than $2,500 per year, the percentage of income spent on medical expenses was larger than those for the higher income families, which indicates an effort to meet medical needs with limited income. But the elasticity with respect to education was about zero for this group. Apparently, increased educational attainment would not lead to a rise in medical expenses unless additional knowledge was accompanied by higher income.

2/ U.S. Department of Agriculture, Survey of Consumer Expenditures, 1960-61; BLS Rpt. No. 237-93. (Rpt. CES 15) (Table 10A), Feb. 1965.

Table 11.--Family income and expenditures in United States inside and outside SMSA's, 1960-61

Item	Total	Inside SMSA's				Outside SMSA's			
		Total	Urban	Rural Nonfarm	Farm	Total	Urban	Rural Nonfarm	Farm
	Dollars								
Income after taxes	5,557	6,164	6,165	6,220	5,516	4,493	4,917	4,150	4,309
Expenditures for current consumption	5,047	5,623	5,632	5,657	4,409	4,039	4,480	3,806	3,509
Medical expenditures	340	368	366	384	430	291	315	266	297
	Percent								
Percent medical is of expenditures	6.7	6.5	6.5	6.8	9.8	7.2	7.0	7.0	8.5

Source: National Center for Health Statistics, Personal Health Expenses, Per Capita Annual Expenses, July - Dec. 1962, Series 10, #27.

Medical expenditures per family tend to be greater inside SMSA's than outside, according to averages from a survey of 13,728 persons perviously discussed (table 11). Inside the SMSA's, medical expenditures were larger both absolutely and as a percentage of total spending among rural persons compared with urban ones. However, outside SMSA's urban families spent more per family and rural families spent less.

Income variations may explain much of the variation in spending for medical services between urban families and rural nonfarm families. There appears to be a definite influence of agriculture on spending for medical care. Persons in agriculture tend to have lower incomes but larger medical expenditures than their nonfarm neighbors (table 11).

USE OF HEALTH CARE SPECIALISTS

The discussion here is based on references from household interviews of the civilian, noninstitutional population. Data on specialists and general practitioners were considered to compare the populations outside of SMSA, both farm and nonfarm, with residents of SMSA's with respect to use of pediatricians, obstetricians and gynecologists, ophthalmologists, otolaryngologists, psychiatrists, dermatologists, orthopedists, chiropractors, optometrists, and podiatrists. The data provide further insights into the impact of income, education, and rurality on expenditures for medical services and suggest that some of the variations discussed previously are due to the use of specialists.

Increasing rurality is directly related to a decreasing reliance on specialists for health care (tables 12-22 and fig. 5). There was greater use of specialist physicians in SMSA's than in non-SMSA's. In the latter group, a larger percentage of nonfarm people used each specialist group than farm people. The use of optometrists, as measured by the percentage of people with visits and average number of visits per patient, was generally uniform throughout all areas (table 12 and fig. 5).

An exception to the general rule was that use of chiropractors increased with increasing rurality of the area (table 13). This fact cannot be explained on the basis of income and education. For example, the population with family income under $4,000, where the family head had less than 9 years of school, had only 2.2 percent of its members as users of chiropractic services. The population with family income under $2,000 per year had a corresponding frequency of 2.0 percent. The fraction of farm population outside SMSA's with chiropractic visits had 4.3 percent, while the fraction of the nonfarm population outside SMSA's had a rate of 2.7 percent (table 14).

The use of pediatricians by persons under 17 years of age shows strong residence differentials. The rate of use within SMSA's was six times that of farm non-SMSA, and twice that of nonfarm non-SMSA. However, it is difficult to determine from these sources whether income and education largely explain these differences. For example, the fraction of U.S. population under 17 years of age in families with income under $4,000 and whose head had less than 9 years of education, was 4 percent. The percentage was the same for the farm non-SMSA population under 17 (table 15 and fig. 6).

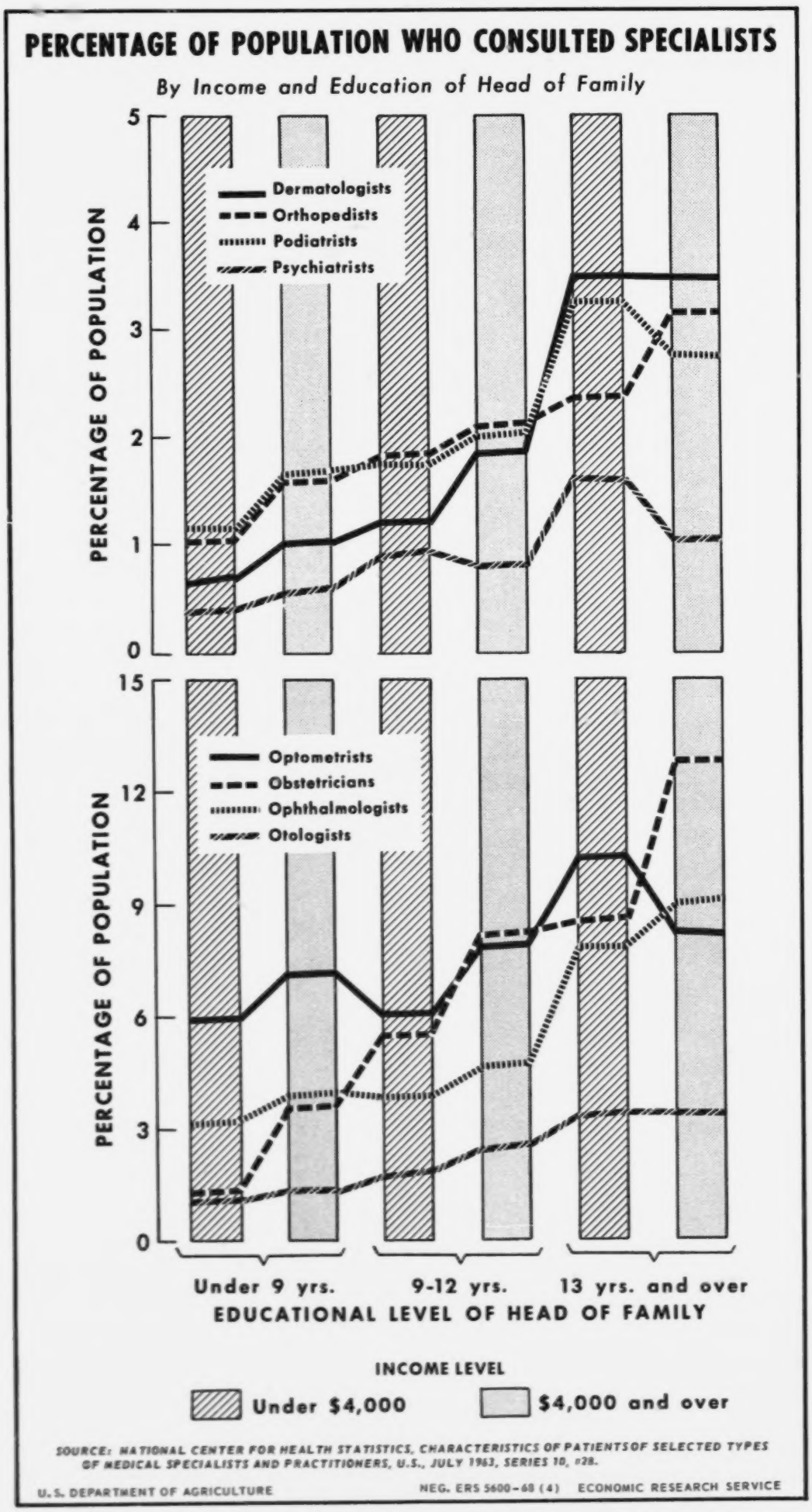
PERCENTAGE OF POPULATION WHO CONSULTED SPECIALISTS
By Income and Education of Head of Family
PERCENTAGE OF POPULATION
5
4
3
2
1
0
Dermatologists
Orthopedists
Podiatrists
Psychiatrists
15
12
9
6
3
0
Optometrists
Obstetricians
Ophthalmologists
Otologists
Under 9 yrs.
9-12 yrs.
13 yrs. and over
EDUCATIONAL LEVEL OF HEAD OF FAMILY
INCOME LEVEL
Under $4,000
$4,000 and over
SOURCE: NATIONAL CENTER FOR HEALTH STATISTICS, CHARACTERISTICS OF PATIENTS OF SELECTED TYPES OF MEDICAL SPECIALISTS AND PRACTITIONERS, U.S., JULY 1963, SERIES 10, #28.
U.S. DEPARTMENT OF AGRICULTURE
NEG. ERS 5600-68 (4) ECONOMIC RESEARCH SERVICE

Figure 5

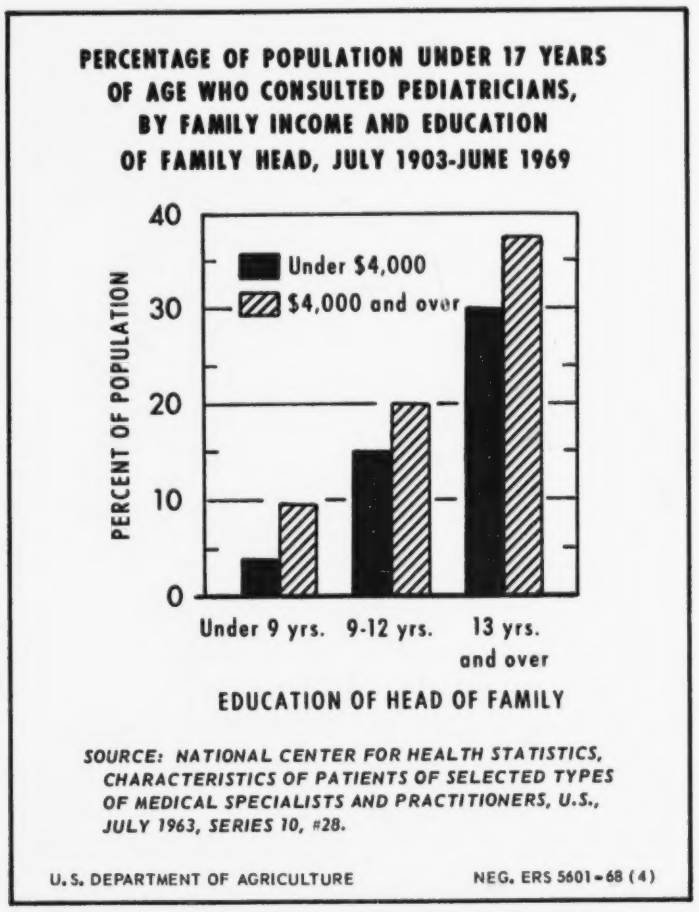
PERCENTAGE OF POPULATION UNDER 17 YEARS OF AGE WHO CONSULTED PEDIATRICIANS, BY FAMILY INCOME AND EDUCATION OF FAMILY HEAD, JULY 1903-JUNE 1969
PERCENT OF POPULATION
40
30
20
10
0
Under $4,000
$4,000 and over
Under 9 yrs.
9-12 yrs.
13 yrs. and over
EDUCATION OF HEAD OF FAMILY
SOURCE: NATIONAL CENTER FOR HEALTH STATISTICS, CHARACTERISTICS OF PATIENTS OF SELECTED TYPES OF MEDICAL SPECIALISTS AND PRACTITIONERS, U.S., JULY 1963, SERIES 10, #28.
U.S. DEPARTMENT OF AGRICULTURE
NEG. ERS 5601-68 (4)

Figure 6

The use of obstetricians and gynecologists shows some numerical relations to the use of pediatricians. The farm population with visits outside of SMSA's was 2.7 percent compared with 8.2 percent for all females in the United States. Visits were correlated with income and education. For example, those with family income less than $4,000, and family heads with education less than 9 years, have substantially fewer visits to obstetricians or gynecologists (table 16).

Visits to ophthalmologists, otolaryngologists, dermatologists, orthopedists, podiatrists, and psychiatrists show analogous residence differentials to each other (table 17-22). The fraction of the population with visits to one of these specialists is twice as high in SMSA's as for farmers outside SMSA's.

Table 12.--Percentage of population with optometric visits and annual visits per patient by sex and selected characteristics, United States, July 1963-June 1964

Residence	Percentage of population with visits			Annual visits per patient		
	Total	Male	Female	Total	Male	Female
	Percent			Number		
All persons	8.7	7.7	9.7	1.4	1.4	1.4
SMSA	8.6	7.7	9.4	1.4	1.4	1.4
Outside of SMSA:						
Nonfarm	9.1	7.9	10.3	1.4	1.4	1.4
Farm	8.6	6.6	10.8	1.3	1.3	1.3

Source: National Center for Health Statistics, Characteristics of Patients of Selected Types of Medical Specialists and Practitioners, U.S., tables 24 and 25, July 1963-June 1964, Series 10, #28.

Table 13.--Percentage of population with chiropractic visits and annual visits per patient by sex and residence, United States, July 1963-June 1964

Residence	Percentage of population with visits			Annual visits per patient		
	Total	Male	Female	Total	Male	Female
	Percent			Number		
All persons	2.3	2.4	2.2	4.7	4.4	5.0
SMSA	1.9	2.0	1.8	4.7	4.4	5.1
Outside of SMSA:						
Nonfarm	2.7	2.8	2.6	4.6	4.3	4.9
Farm	4.3	4.7	4.0	4.7	4.7	4.6

Source: National Center for Health Statistics, Characteristics of Patients of Selected Types of Medical Specialists and Practitioners, U.S., tables 21 and 22, Series 10, #28.

Table 14.--Number of persons and percentage of the population with chiropractic visits, and annual number of visits per patient, by family income and selected characteristics, United States, July 1963-June 1964

Education of head of family	Percentage of population with visits			Annual visits per patient		
	All incomes 1/	Under $4,000	$4,000 and over	All incomes 1/	Under $4,000	$4,000 and over
	Percent			Number		
All persons	2.3	2.2	2.3	4.7	4.9	4.6
Under 9 years	2.4	2.2	2.6	4.9	4.8	5.1
9 - 12 years	2.4	2.3	2.5	4.6	5.0	4.5
13 years and over	1.9	2.1	1.9	4.4	4.4	4.4

1/ Includes unknown income.
2/ Includes unknown education.

Source: National Center for Health Statistics, Characteristics of Patients of Selected Types of Medical Specialists and Practitioners, U.S., table 23, July 1963-June 1964, Series 10, #28.

Table 15.--Percentage of population under 17 years of age with pediatric visits, and annual visits per patient, by sex, age, and residence, United States, July 1963-June 1964

Characteristic	Percentage of population with visits			Annual visits per patient		
	Total	Male	Female	Total	Male	Female
	Percent			Number		
All persons under 17 years	19.5	19.5	19.5	3.2	3.2	3.1
Age						
Under 6 years	32.1	32.4	31.7	3.6	3.7	3.6
6-16 years	11.8	11.6	12.0	1.4	2.3	2.4
Residence						
SMSA	24.5	24.4	24.7	3.2	3.2	3.2
Outside of SMSA:						
Nonfarm	12.5	12.8	12.1	2.9	3.0	2.9
Farm	4.0	4.0	3.9	2.7	2.7	2.7

Source: National Center for Health Statistics, Characteristics of Patients of Selected Types of Medical Specialists and Practitioners, U.S., tables 1 and 2, July 1963-June 1964, Series 10, #28.

Table 16.--Percentage of population with obstetric or gynecology visits and annual number of visits per patient by residence, United States, July 1963-June 1964

Residence	Percentage of population with visits	Annual visits per patient
	Percent	Number
All females	8.2	3.9
SMSA	9.9	3.9
Outside of SMSA:		
Nonfarm	5.6	4.1
Farm	2.7	3.5

Source: National Center for Health Statistics, Personal Health Expenses, Distribution of Persons by Amount and Type of Expense, U.S., table 4, July - Dec. 1965, Series 10, #28.

Table 17.--Percentage of population with ophthalmologic visits and annual visits per patient, by sex and residence, United States, July 1963-June 1964

Residence	Percentage of population with visits			Annual visits per patient		
	Total	Male	Female	Total	Male	Female
	Percent			Number		
All persons	6.2	5.4	6.9	1.8	1.7	1.8
SMSA	7.1	6.3	7.8	1.8	1.8	1.8
Outside of SMSA:						
Nonfarm	4.9	4.1	5.7	1.7	1.7	1.7
Farm	3.5	3.3	3.8	1.8	2.0	1.7

Source: Characteristics of Patients of Selected Types of Medical Specialists and Practitioners, U.S., tables 6 and 7, July 1963-June 1964, Series 10, #28.

Table 18.--Percentage of population with otolaryngologic visits and annual visits per patient and residence, United States, July 1963-June 1964

Residence	Percentage of population with visits			Annual visits per patient		
	Total	Male	Female	Total	Male	Female
	Percent			Number		
All persons	2.5	2.3	2.6	2.5	2.5	2.4
SMSA	2.8	2.7	2.9	2.5	2.5	2.5
Outside of SMSA:						
Nonfarm	2.1	1.9	2.2	2.4	2.4	2.3
Farm	1.4	1.3	1.5	2.2	2.1	2.4

Source: National Center for Health Statistics, Characteristics of Patients of Selected Types of Medical Specialists and Practitioners, U.S., table 9, Series 10, #28.

Table 19.--Percentage of population with dermatologic visits and annual visits per patient by sex and residence, United States, July 1963-June 1964

Residence	Percentage of population with visits			Annual visits per patient		
	Total	Male	Female	Total	Male	Female
	Percent			Number		
All persons	1.5	1.4	1.7	3.2	3.3	3.1
SMSA	1.9	1.7	2.1	3.3	3.4	3.2
Outside of SMSA:						
Nonfarm	1.0	0.9	1.1	3.1	3.1	3.1
Farm	0.7	1/	1/	1/	1/	1/

1/ Value insufficient for computation.

Source: National Center for Health Statistics, Characteristics of Patients of Selected Types of Medical Specialists and Practitioners, U.S., tables 15 and 16, July 1963-June 1964, Series 10, #28.

Table 20.--Percentage of population with orthopedic visits and annual visits per patient by sex and selected characteristics, United States, July 1963-June 1964

Residence	Percentage of population with visits			Annual visits per patient		
	Total	Male	Female	Total	Male	Female
	Percent			Number		
All persons	1.8	1.9	1.7	3.2	3.1	3.2
SMSA	2.1	2.1	2.0	3.3	3.3	3.3
Outside of SMSA:						
Nonfarm	1.4	1.6	1.2	2.9	2.8	3.1
Farm	0.9	1.2	1/	2.6	2.8	1/

1/ Value insufficient for computation.

Source: National Center for Health Statistics, Characteristics of Patients of Selected Types of Medical Specialists and Practitioners, U.S., tables 18 and 19, Series 10, #28.

Table 21.--Percentage of population with podiatrist visits and annual visits per patient by sex and residence, United States, July 1963-June 1964

Residence	Percentage of population with visits			Annual visits per patient		
	Total	Male	Female	Total	Male	Female
	Percent			Number		
All persons	1.6	1.1	2.2	3.6	3.6	3.6
SMSA	2.0	1.3	2.7	3.7	3.7	3.7
Outside of SMSA:						
Nonfarm	1.0	0.7	1.3	3.2	3.5	3.1
Farm	0.6	1/	1/	3.1	1/	1/

1/ Value insufficient for computation.

Source: National Center for Health Statistics, Characteristics of Patients of Selected Types of Medical Specialists and Practitioners, U.S., tables 27 and 28, Series 10, #28.

Table 22.--Percentage of population with psychiatric visits and annual visits per patient by sex and residence, United States, July 1963-June 1964

Residence	Percentage of population with visits			Annual visits per patient		
	Total	Male	Female	Total	Male	Female
	Percent			Number		
All persons	0.5	0.4	0.6	4.7	4.6	4.8
SMSA	0.6	0.5	0.7	5.0	4.8	5.0
Outside of SMSA:						
Nonfarm	0.4	0.3	0.4	4.0	3.9	4.1
Farm	1/	1/	1/	1/	1/	1/

1/ Value insufficient for computation.

Source: National Center for Health Statistics, Characteristics of Patients of Selected Types of Medical Specialists and Practitioners, U.S., tables 12 and 13, July 1963-June 1964, Series 10, #28.

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